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THE INDUSTRIAL FUNCTION OF
THE CENTRAL BUSINESS DISTRICT

A THESIS

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the Faculty of the Graduate Division

by

Gary Mitchell Cooper

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ABSTRACT

There is a lack of knowledge among city planners, business interests and others concerned with the central business district as to whether industrial uses are properly located in the business district. The purpose of this thesis is to contribute to the knowledge of industrial uses in the central business district by answering various questions concerning the industrial function of the central business district and the objectives which might be achieved in planning for this function.

The objective of this thesis was accomplished by determining the kind of industrial land uses which generally locate in the central business district, by analyzing factors accounting for their location, by investigating their movements, by discussing their characteristics and needs and by evaluating their appropriateness for a location in the central business district. The methods used in this thesis were: an examination of pertinent literature; a survey and field observation of industrial land uses in the Atlanta, Georgia, central business district; interviews with interested civic leaders, businessmen, city planners, governmental officials and proprietors of central business district industries; and correspondence with planning agencies in various cities throughout the United States.

This study found land-use data to support the fact that a considerable number of industrial establishments do exist in most central business districts. Industry is found in such a location because of advantages such as accessibility, availability and others. Many advantages which the central business district offers certain industries are decreasing because of inadequate development and planning and because of the appearance of these advantages in outlying locations. It is becoming less imperative that industries locate in the central district, and unless the needs of industries desiring central business district locations are understood and satisfied movement to outlying sites may evolve.

This thesis concludes that many industries are an appropriate function of the central business district; however, it is recognized that each city is unique and that this conclusion may not necessarily apply to every city. The problem is for each city to determine whether industrial uses are appropriate to its central business district in view of the conditions which prevail. The history has been for many cities to arbitrarily deem industry a "non-CBD" use without comprehensively studying the problem. Very few studies of the central business district have dealt comprehensively with its industrial function.

Intelligent consideration of the industrial function is imperative to the comprehensive planning of the central business district's future growth and development. This thesis recommends that each city should survey and analyze the industrial uses located in its central business

district and plan for such industry in a manner which will be beneficial to the industries, the central business district and the city. It suggests studies that should be undertaken and alternative solutions that may be employed.

CHAPTER I

INTRODUCTION

Today a discussion of the central business district or central district of American cities is certainly timely. Urban decentralization and the emergence of super shopping centers have created an unprecedented interest in the central district on the part of businessmen, governmental officials and others. Numerous articles, both academic and popular, are being published concerning the successful experiments of various cities with pedestrian malls, with rapid transit and properly planned parking facilities and with proposed master plan designs for the business district of the future.

When those persons interested in the central business district endorse policies and plans consideration is usually given to retail and office uses, to pedestrian problems, to public transit, to parking facilities, to parks and to civic buildings. Generally such plans are not concerned with the problems and the function of industry in the central district.

Purpose. -- There is a lack of knowledge among city planners, business interests and others concerned with the central business district as to whether industrial uses are properly located in the central district. The purpose of this study is to answer various questions concerning

the industrial function of the central business district and the role of the city planner in the central business district.

Approach. --The objective of this study was accomplished by determining the kinds of industrial land uses which generally locate in the central business district, by analyzing factors accounting for their location, by investigating their movements and by evaluating their appropriateness for a location in the central business district. The methods used in this study were: an examination of pertinent literature; a survey and field observation of industrial land uses in a central district; interviews with proprietors of central district industrial establishments and interested businessmen, civic leaders, city planners and governmental officials; and correspondence with planning agencies in various cities throughout the United States. The study has been limited to cities of at least 150,000 population because of a lack of pertinent literature pertaining to smaller cities and it is believed that the conclusions and recommendations of this study are more applicable only to the larger cities.

Definition of industrial land use. --The term industrial as used in this thesis is considered to include only those land uses which meet the Bureau of the Budget's definition of manufacturing land uses. The Bureau of the Budget considers as manufacturing all processes carried on by those establishments engaged in the mechanical or chemical transformation of inorganic or organic substances into new products. Establishments engaged in assembling component parts of manufacturing

products are also considered manufacturing if the new product is neither a structure nor other fixed improvement.¹

Delineation of the central business district. --Many different methods are used by city planners, geographers and others in delineating the central business district. The methods used vary from the highly scientific to the extremely arbitrary in nature. Not only do the methods of delineation differ but the title of the area may be called central business district, central commercial area, central district and central area among others.

Saint Paul, Minnesota, decided that "a scientific method must be used in order to include only that area which truly functions as the central business district." A system of index numbers was used to define the central district core area and fringe area both of which when combined were considered to be the central business district.² Saint Paul's system was derived from a method which was applied by a team of geographers to nine cities with a population range of from 90,000 to 203,000 people.³ Qualls, in a study of the problems and delimitation of the central business district, made an intensive field survey of special needs and characteristics of central business district functions which are defined as "indications." These indications were then used in delimiting the Atlanta, Georgia, central business district.⁴

Many cities have somewhat arbitrarily delineated their central business districts. Dallas, Texas, defines its business district as the

area bound by a proposed freeway loop of the downtown area.⁵ Other cities have used natural and man-made barriers, census tracts and zoning districts as a basis for defining the central business district. Knoxville, Tennessee, for example, delineated its business district by using railways, topography and bodies of water as boundaries,⁶ and Denver, Colorado, used census tract boundaries.⁷

Many people claim that the delimitation of a boundary for purposes of studying the central district should be determined arbitrarily. According to Rannels, in a study of land uses in the core of the city, the limiting of a study to the central district core, which generally includes offices, shopping districts and service establishments, may exclude the central areas of wholesaling and light industry. Yet an over-extension of the central district can include industrial concentrations which are not typically central. Rannels' solution is to use an arbitrary delineation but include some additional territory to allow for future development and adjustment.⁸ Chapin suggests the use of an empirical method as a basis for delineating the larger study area.⁹

The term central business district when used in this thesis is considered to be the area defined as such in the particular literature or city to which reference is being made. The Atlanta, Georgia, central business district, which is referred to throughout this study because of its use in field surveys, observations and interviews, is the area delimited by Qualls¹⁰ plus a somewhat arbitrary extension which

was necessary to allow for expansion and to eliminate boundaries which caused one side of a street to be outside of the central district when little or no difference was evident in development on each side of a street.

Central business district functions. --There is general agreement as to what functions properly characterize the central business district; however, disagreement does exist concerning the breakdown of the functions.¹¹ This disagreement can be observed by examining studies such as Ratcliff's,¹² Alderson and Sessions',¹³ Murphy's and others,¹⁴ Connell's,¹⁵ Qualls',¹⁶ and Weiss'¹⁷ among others. Typically these studies include retailing, business services, consumer services, wholesaling with stock, wholesaling without stock, manufacturing, non-residential vacant, public and residential in their functional classifications.

After analyzing many functional classifications Weiss arrived at a proposed functional classification system for central business district land use analysis in small metropolitan areas. Although designed for smaller cities, it does incorporate all of the major functional categories: 1) Retail-Type Use; 2) Office-Type Use; 3) Parking Use; 4) Public Use; 5) Quasi-Public Use; 6) Wholesale-Type Use; 7) Industrial-Type Use; and Residential Use.¹⁸ In studying a particular central district it would be desirable to analyse and adapt the many proposed functional classifications to a system which applies to the central business district under study.

Although many people recognize that the central business district has many functions, it is usually treated in reports and plans as though retailing and business services were its only functions. There appears to be a definite need to study one central business district function which city planners and others have, to a degree, neglected -- the industrial function.

Central business district planning. -- A survey of current central business district studies and plans shows that the majority are concerned with retailing, office uses, rapid transit, parking, accessibility, civic buildings, parks and aesthetic design. Central district planning has practically neglected the manufacturing function. Most central business district plans either completely ignore industry or briefly recognize it when discussing existing land-use. Industry, if recognized, is usually eliminated from future land-use schemes as it is generally classified as a non-central business district land-use. Two common explanations for omitting industrial uses are: "land values will force industry out" and "the master plan calls for the replacement of industrial uses." No attempt is made to determine whether industry is appropriate in the central district, whether its presence can benefit the central district or what can be done to help central district industries secure their needs. After very little or no study industrial uses are simply classified "non-CBD" and, therefore, denied any serious attention.

There are cities, however, that treat the industrial function of the central business district in their studies and plans in much

greater detail than is generally the case. These studies briefly analyze the problem and make some provisions for manufacturing, but they do not, with a few exceptions, deal with it as thoroughly as the situation deserves. The encouraging aspect of these studies is that central district industry was found important enough to warrant special study and consideration in the future development of the central business district. Regardless of whether industry is deemed an appropriate or non-appropriate central business district land use the importance of the problem has been realized by these cities.

Cities can ill afford to ignore the problem of central district industries if they are to meet the needs of these industries and plan comprehensively for the overall development of the central business district.

Summary. -- This study is an attempt to contribute to the knowledge of industrial uses in the central business district. The orientation of the research and findings is more applicable to larger cities. Land-use data support the fact that the central business district, regardless of the method used to delineate it, contains many different functions, and it is evident that industry is the most neglected of these functions. A considerable number of studies and plans have been prepared in regard to the central district, but very few have dealt with its manufacturing function. Intelligent consideration of this function is imperative to the comprehensive planning of the central business district's future growth and development.

The next chapter attempts to create an understanding of central district industry and the need for including it in central business district planning.

CHAPTER II

THE INDUSTRIAL FUNCTION OF THE CENTRAL BUSINESS DISTRICT

An understanding of the problems and characteristics of a community element is necessary before its needs can be properly planned. This chapter establishes the existence of industrial land uses in the central business district and discusses their characteristics and needs. It attempts to provide a general knowledge of this central district function.

Information for this chapter was secured from: 1) a search of pertinent literature; 2) correspondence with planning agencies in some forty cities of over 150,000 population; 3) a land-use survey and field observations of the Atlanta, Georgia, central business district; and 4) interviews with owners of manufacturing firms, with civic organizations, with governmental officials and with other persons interested in the central business district. The Atlanta central business district was used merely for the purpose of making a qualitative survey. A detailed, quantitative study of industrial land uses in the Atlanta central district was not made as such a study would be beyond the scope and purpose of this thesis.

Industrial Land Use in the Central Business District

Each central business district has unique characteristics especially with respect to the industrial activity located within it. Not only is there a quantitative difference in industrial land use in each central business district but there is also a variation in the kinds of manufacturing (although the garment and printing industries tend to dominate), in the economic status, in the factors underlying location and in other characteristics.

Typical industries in City A's central business district may be totally different from those in City B. Each city has its own geographical setting and history of development which have played an important part in molding the existing land-use pattern. Factors such as characteristics of the population, available space, transportation and regional importance may also account for the particular industrial function of a central business district. For instance, a port city will be attractive to certain manufacturing activities, a regional distribution center such as Atlanta or Dallas to others, older urban centers such as Philadelphia or New York may attract certain industries because of abundant loft space, or a city's geographical position may call for industries which are needed only in that particular area.

City planners and others appear to be divided as to whether the central business district serves an industrial function; however, land-use data have firmly established the fact that these districts contain a

considerable amount of industry, especially in the larger cities. A survey of some forty cities of 150,000 or more population disclosed that each contain manufacturing in the central business district. The amount of industry found ranged from an insignificant two firms to some 1,000 firms.

A land-use survey of the Atlanta central business district conducted by the author, found 98 manufacturing firms located in it. The field survey was backed by a review of the city directory, a check of business license receipts and a telephone call to each firm to accurately determine whether it actually engaged in manufacturing. Such a procedure was necessary because of the similarity between central business district industrial uses and wholesaling with stock.

Some conception of the amount of industrial land use present in the central business district can be ascertained from statistics on manufacturing floor space. Manufacturing land uses occupy 12.3 per cent of total floor space within the Cleveland, Ohio, central business district study area.¹⁹ An inventory of land uses in the central business district of Manhattan (New York City) found 20.5 per cent of the net floor space to be industrial in use. Industrial floor space in the New York business district is 21,100,000 square feet.²⁰ In the Saint Paul, Minnesota, central business district industry occupies 545,360 square feet in the "core" and 3,994,304 square feet in the "fringe." Over fifty per cent of the industrial space in the Saint Paul business district

is located above the ground floor.²¹ The central business district of Saint Louis, Missouri, has 981,507 square feet devoted to industry; that of Detroit, Michigan, contains 4,524,500 square feet of manufacturing floor space; that of Seattle, Washington, has 292,000 square feet occupied by industry; that of Boston, Massachusetts, has 5,950,000 square feet of industrial space.²²

Industrial location within the central business district. --Industrial land uses are normally located in the central business district "frame" or "fringe" as distinguished from the "core."²³ An analysis of existing land use maps of the central business district of nine cities²⁴ clearly shows the tendency of industry to concentrate in the "fringe."

A survey of the Atlanta central business district found manufacturing uses to be located in the fringe rather than the retail core. The largest industrial concentration, the garment and wholesale district, is located in the southern fringe of the business district and separates the office and retail centers from the governmental center. Other manufacturing concentrations are found in the extreme northwest portion of the business district and scattered throughout the eastern periphery. Very little industry is found in the core area.

The sources examined in this study tend to verify Qualls' assertion that as the central business district expands and changes location it leaves a blighted area of cast-off buildings which are usually occupied by -- among others -- light-manufacturing establishments.

These firms tend to locate together and on one side of the central business district in a location which is usually characterized by blight and loft buildings and is convenient to transportation.²⁵

It may be advantageous for the downtown area to retain certain industries in the fringe because business district functions are not likely to require within the near future all of the space now occupied by these uses. Decentralization of these industries may result in a desolate vacant area immediately surrounding the central business district until such time as business district functions expand into the vacated gap, if ever.

Kinds of industry found in the central business district. --Of the various industries generally located in the central business district, the garment or needle trades and printing industries tend to dominate in most cities. These industries clearly dominate the manufacturing function of the Atlanta business district. Thirty-two per cent of the total central district industries are garment and thirty-seven per cent are printing. Approximately seventy-one per cent of the garment firms in Atlanta are located in the central business district and about forty per cent of the City's printing establishments are downtown. Also a majority of the remaining firms are located in the central area. A review of land-use data shows these industries to be dominant in the central business districts of Saint Paul, Boston and New York, to list only a few. In Boston, for example, apparel firms account for 35.8 per cent and printing firms 16.5 per cent of the industry found in

the central business district. The nearest competitor is leather goods with only 7.3 per cent.²⁶ And in Saint Paul apparel comprises 16.7 per cent and printing 21.8 per cent of the total central business district industrial space.²⁷

Many kinds of industrial uses are found in the central business district. A detailed land-use survey of the Atlanta business district found 98 industrial firms ranging in size from no more than a small office to a plant of 100,000 square feet. The kinds of manufacturing uses found are:

Printing	36
Garment (includes dresses, shirts, overalls, hats, lingerie, sportswear)	31
Food (includes ice cream, bakeries, candy, potato chips, pies)	5
Lithograph	3
Jewelry	11
Dental Laboratory	1
Optical	2
Leather Goods	3
Rubber Stamps	2
Picture Frames	2
Publishers	2

A review of pertinent reports and correspondence with some forty cities proved the following kinds of industrial uses to be relatively common in the central business district:

- Garment and related
- Printing and publishing
- Food and kindred
- Leather goods (belts, billfolds)
- Electrical goods
- Scientific instruments
- Plastic

Ink
Canvas goods
Furs
Jewelry
Signs
Cosmetics
Paper products
Drugs
Toys
Buttons
Dental laboratories

Some industries are unique to a particular central business district because of its geographic or economic position. In Seattle, for example, fish packing, a cannery and some food processing firms are in the central business district but are associated with the waterfront rather than the central district. Several large concerns which manufacture pumping and other oil-field equipment are found in the Tulsa, Oklahoma, central business district. Every city probably contains some industry which is not typically found in the central business district but which is appropriate for its business district. Seattle's position as an important seaport, for instance, accounts for the firms specializing in seafood, and in Tulsa the oil field equipment manufacturers are near downtown oil company offices to make inspection of the products convenient for salesmen and clients.

The central business districts of American cities contain almost every type of industry generally found within the city proper. Many of these industries are common in all central business districts, but some exist only in business districts where certain environmental

conditions prevail, as illustrated above in the cases of Seattle and Tulsa.

Advantages of central business district location. --Generally the central business district offers certain inherent advantages to industrial uses. They are: 1) access to a large and varied labor supply, 2) convergence of public transit routes, 3) convenient proximity to repair shops, business services and financial facilities, 4) access to raw materials and semi-finished goods, 5) proximity to central markets, wholesalers and major retail outlets, 6) cheaper transportation costs, and 7) convenience to buyers.

Many people maintain that the major advantages of the central district are availability and accessibility. Availability is a function not only of the variety in the kinds of services provided but also the number of each kind and the quality and price range for each service. Accessibility is the ease of movement from an origin within a metropolitan area to the central business district.²⁸ It may be stated, in terms of accessibility and availability, that the central business district is the most convenient area of the city to the greatest number of persons for the greatest variety of purposes. It enjoys a definite advantage in aggregate convenience over other sections of the community.

Traffic and parking problems are threatening the advantage of accessibility in the central district. This problem is critical in that a decline in accessibility may eventually offset the advantages of

availability. Many cities are, however, implementing positive programs to solve this problem. A proper solution is necessary if the central business district is to remain the focal point for transportation, labor and auxiliary services.

Increased mobility has been an important factor in diminishing the advantages of a central district location. Fast truck delivery, for example, has enabled certain firms to seek outlying sites. Buyers, through the use of motels and expressways, are no longer bound to the downtown area, and the increased ownership of automobiles has made most any type of labor available throughout the community. This does not necessarily mean that an outlying location is best, but that a central district location is no longer imperative to certain operations.

The central business district offers many advantages to some industries; however, these advantages are decreasing because of certain factors such as congestion and increased mobility. Notwithstanding these advantages industrial firms are leaving the central district as location in it, although still desirable, becomes less imperative. Today the typical central business district industry also finds many negative factors which offset the benefits afforded by a downtown location. These factors will be discussed next.

Disadvantages of central business district location. --Despite the advantages offered by a central business district location, industries

are leaving. The reason is that these advantages are not being utilized properly because of a lack of intelligent planning and development.

Common disadvantages, such as lack of room for expansion, for parking, for truck loading and for truck access, are shared by most central district industries. Little has been accomplished to meet the needs of industrial uses, and as a result they have been forced to accept whatever facilities are available. Generally this has meant location in an obsolete building with inefficient plant layout, inadequate parking and loading space, and insufficient storage space. There is no room for expansion, the environment is blighted and transportation is delayed as streets are poorly platted and narrow.

Summary. -- Although there is disagreement as to whether manufacturing is a central business district function, it is evident that most business districts contain a considerable number of industrial establishments. These firms are especially numerous in the "CBD fringe" as distinguished from the "core." Most every kind of industry is found in the central district, but the printing and garment industries predominate. The central business district has many advantages to offer certain light industries, but these advantages are decreasing because of inadequate development and planning. It is becoming less imperative that industries locate in the central district, and unless the needs of industrial uses desiring central business district locations are understood and satisfied movement to outlying sites may evolve.

Characteristics of Central Business District Industry

This portion of the thesis will attempt to provide an understanding of the different characteristics of central business district industries.

Economic status. --The size of central business district industry ranges from two to 300 employees, and their floor space ranges from that of a small office to 100,000 square feet. The downtown area of Cincinnati contains 637 or some thirty-nine per cent of the manufacturing concerns which are located in that City's metropolitan area. They are, however, mostly small with 354 employing less than twenty-five workers. Eighty-one loft buildings house some 289 of these firms.²⁹ Of Boston's 914 central district industries, 471 employ from 8 to 24 workers, 358 from 25 to 99 workers, 66 from 100 to 249 workers and 19 over 250 workers.³⁰

Three types of industries are generally found in the central business district. They are: the "incubator" or newly created industries which locate there because of economic reasons; the type of industries which must be located close-in because of markets, of labor, of transportation and other needs; and the industries which do not necessarily need a central district location but have remained there over a long period of time. Central business district industries tend to be relatively small operations. A survey of industrial uses in the Atlanta central business district found these firms to have been in operation

from two to sixty-two years with most being in business over twenty years and a large number over forty years.

Newly organized manufacturing firms frequently find that the central business district serves as an incubator by providing low-rental loft facilities, nearby suppliers and buyers, a large supply of cheap labor, accessible transportation and proximity to services. An idea, some skill and a small amount of capital are the seeds from which new manufacturing enterprises grow.

It may be that many small firms incubate in the central district and upon reaching maturity move out. Newark, New Jersey, has a large amount of old multi-story buildings into which small, new firms tend to locate, but these firms are not always an asset. Such firms are usually low wage, marginal operations which move out upon achieving financial success. In this capacity these firms only tend to contribute to a general lack of stability.³¹ Paterson, New Jersey, and Chicago, among other cities have reported that incubator industries start production in small plants in the central district and move out when increased production requires larger industrial space.

Space is the prerequisite for industries which are forced, economically, to start in a central location. Usually the available space was not created for their specific use; therefore, these firms may find it to be either in excess of or far below their needs. Rarely is the space remodeled to meet individual needs, and the successful firm is hard

pressed to find room for expansion and other requirements. This shortage forces such firms to migrate to adjacent areas or to more stable outlying areas some distance from the central business district. A leading industrial consultant states, "many industries incubate in small facilities near the crowded city center, but that almost always they are strangled by not being able to secure contiguous land for expansion and they usually move outside."³²

McKee, in a study of planned industrial districts, found that after an incubation period in the central city growing young industries tend to expand their markets and perfect and standardize their techniques and products. As they become less dependent upon the advantageous factors of central location these industries build in decentralized locations where new needs are more adequately attained.³³

Although the central business district undoubtedly provides an incubator for industry, many people consider its role as a "breeding ground" to be very slight. The general opinion of central business district manufacturers in Atlanta is that the downtown area once served as an incubator for new industry but does not fulfill this function today. However, there are several owners who consider the business district an incubator, but only if there is a need to be near competitors (in which case a district would have to exist) or markets. It appears that the central business district is no more of an incubator than other portions of the city unless it contains excessive and cheap loft space

or the new industry needs a central location regardless of financial status.

Many central business district industries appear to be very successful. These successful firms are usually either holdovers from the past or they have a definite affinity for central district advantages. The largest industrial firm in the Atlanta central business district, a manufacturer of candy, is an excellent example of an establishment which has remained in the central district. This firm would prefer an outlying industrial district location. Their plant was originally in an outlying location; however, some fifty years of urban growth finds it situated in the very heart of the central business district. Lease commitments have kept the firm in the central district, and the company has made the most of the situation through improved technology and management.

Most of Atlanta's central district industries are successful but small firms. They desire a central location but only if it provides adequate facilities. The financial progress of these firms is evident from their desire to expand, but they are not financially successful to the extent of securing the most desirable central district sites. If the central business district fails to provide for their needs these firms will move out when lease commitments expire. Increased mobility and a degree of success have enabled them to be somewhat independent concerning location.

Central business district industries are mostly small, stable firms that have remained in their present location for a long period of time. Initially it was imperative that a central district location be obtained but today such a location is no longer necessary. It is still a desirable location, but only in a relative sense -- relative in that a central district location would be more desirable than an outlying location if it met needs as well as an outlying site. A considerable number of industries "incubate" in the central business district but these firms seldom remain after success is achieved.

Rent. -- Many central business district industries, especially the needles-trade industry, need a low rent to operate successfully.

Rents in Atlanta's business district are apparently very high according to the industrial firms located there. This is true even in the older areas where the industrial uses tend to congregate. These firms have indicated that rent has reached the point where it is impossible to pay higher rents and still operate. They feel that a lower rent can be obtained in outlying areas.

Apparently, however, the central district in most cities is not at a disadvantage in the provision of rental space for industry in existing structures. A study by the Committee for Economic Development found that apart from a few specialized districts whose appeal results from the need of competitors to be located near each other, prevailing rental rates for manufacturing space in the central district

of New York City is little higher than space in the suburbs.³⁴ Yet industries are moving out of the central district because available outlying buildings more fully meet their needs than those available downtown. The structures available downtown are usually either industrial buildings constructed for multiple tenancy or obsolete factories abandoned by their original owners.

Central business district industries are generally anxious to avoid any investment in structures; therefore, they have been forced to take whatever space is available. As buildings have become available in the outlying urban areas these industries have tended to move outward. Existing rentals for such space have been low enough to prevent the construction of new industrial structures in New York City. Such structures -- even if built on sites acquired at no cost -- would have to command an annual rental of more than \$3.00 per square foot whereas the prevailing rate in existing structures tends to be less than \$1.00.³⁵

A Philadelphia study found rents in central locations to average \$.75 to \$.90 per square foot for apparel industries, \$.60 to \$1.00 per square foot for commercial printers, \$1.00 and under for electronics industries and \$.80 to \$1.25 for dental laboratories. Some firms have found rents as low as \$.40 per square foot in loft space in extremely blighted central areas; however, such space poses a labor problem as workers are reluctant to come into these areas. The current thinking

of central business district type industry in Philadelphia is that \$1.00 is the absolute ceiling for rent. Some industries have, however, expressed a willingness to pay up to \$1.25 for modern facilities in the central district.³⁶

Many central business district manufacturers claim that rent is not a critical factor of location. These manufacturers, in general, apparently have not given much thought to rent and efficiency problems. Rent does assume importance when it becomes progressively higher and the site becomes progressively more obsolete. This is the situation which confronts most central business district industrial firms and tends to push them away from the central district. That rent has been dismissed as a locational factor is verified by many studies of the apparel industry (an industry which is commonly found in the central district) which found it to comprise under two per cent of unit cost.³⁷

Low rental industrial space is not to be found in most central business districts and the firms presently located in these areas must seek adequate space at reasonable rent elsewhere in the metropolitan area. The availability of plants at comparable rents in outlying areas plus other factors have made it possible for firms to leave the central area when rents become excessively high. Rental space in the central district can compete with outlying space in cost, but the central district has not provided adequate, modern facilities at comparable rents. Rents, with some exceptions, do not play a significant role in the

incubator function of the central business district. New industries as well as many successful industries do not locate in the central district primarily because of low rent -- but because of other needs. Unreasonable rents will, however, indirectly cause industries to leave the central district when certain needs are not provided.

Transportation. --Increased motor vehicle mobility and urban decentralization have played a decided role in lessening the value of a central business district industrial location from the standpoint of transportation needs. A central district location did have, and still does to a degree, a transportation advantage as it is the point where transit lines converge and where a central origin is possible for deliveries throughout the city. This advantage has decreased as improved traffic arteries and motor vehicles have made prompt delivery service possible between almost any points of origin and destination within the city. Also the increased use of the automobile by every financial class has made any point within the metropolitan area accessible to workers.

In the Atlanta central business district the change in transportation has been especially significant to the printing firms, the rubber stamp manufacturers and the large dental laboratories. These firms cater mostly to a local market which was at one time concentrated in the downtown area but is now scattered throughout the metropolitan area. Whereas delivery was once by foot in the central district it is

now by motor vehicle throughout the metropolitan area. Most printing firms, for instance, now believe it is possible to give customers prompt delivery service from an point within the city because of increased mobility.

Transportation rates may account for central location in some large metropolitan areas where "commercial zones" have been created. These are zones in which local truck traffic is not subject to Federal rate regulations. Rates correspond to operating costs because of competition; therefore, a firm catering to the metropolitan market might, because of this consideration, tend to locate near the center of the city.³⁸

Also it is difficult for small shippers to have commodity rates (rates for specified commodities, applicable between stated points of origin and destination, at well below the general class rates) extended to outlying areas. The small firm, therefore, has an added incentive to cling to central locations where the probabilities are good that shipments may be able to secure commodity rates. This has been a centralizing force for many manufacturing operations.³⁹

Transportation has been greatly decreased as a significant factor in central business district industrial location. Most industries believe they are independent of public transit for employees because of increased automobile usage by workers. Those firms which depend on fast, prompt delivery are confident that such deliveries can be made

from any point in the city because of increased mobility. Yet, as will be elaborated upon when discussing the labor characteristics of central business district industry, some low wage industries may experience difficulties without adequate transit service. And many industries recognize the desirability of originating deliveries in the central district of the city.

It is evident that the central business district still has a transportation advantage; however, this advantage will be an asset only if it is properly utilized and if other central district industrial needs are provided.

Linkages. --The relationship between central business district industries and other establishments and services is a definite factor of location. A general need of these industrial firms is to draw on short notice from a common pool of rentable space, labor, skilled subcontractors, business services and other such facilities from outside the firm. The facilities which are obtained from outsiders are called external economies. Industries requiring these economies usually demand a degree of flexibility because of uncertainty over both input and product. Some examples of external economies are: 1) maintenance service for machinery; 2) manufacturers specializing in contract work; 3) suppliers capable of making fast deliveries; 4) presence of small variable and rentable manufacturing space; and 5) supply of labor accustomed to seasonal cycles.⁴⁰

A major advantage of the central district is the availability of these external economies which can reduce costs. The appearance of some external economies in outlying areas as well as downtown has removed a major obstacle to suburban location for many small firms. This has resulted in a tendency for the central district to specialize in the communications-oriented and the unstandardized segments of manufacturing.⁴¹

The printing and apparel industries are good examples of these types of manufacturing. Printing is characterized by a highly variable output and a need for speedy communication and transportation. The time between acceptance of an order and delivery of the finished product is critical to the printer's existence; therefore, the printing firm is dependent upon proximity to customers, speed of delivery and other service factors.

The small garment manufacturer is a typical unstandardized industry. The small size is a result of small scale retail ordering of diversified styles; therefore, the firm must be geared to quick changes in style. Large inventories which might become obsolete overnight cannot be tolerated. In the garment industry improvement is on style changes and marketing rather than on production. It is better to offer a wider and more up to date style than to reorganize production to increase output per operative.⁴² This type of industry is dependent

upon small, flexible space and close proximity to suppliers, style leaders, wholesale outlets, contractors and outside services.

A survey of the Atlanta central business district found that certain industrial firms need a close relationship with competitors, with suppliers, with markets and with the main post office. Proximity to competitors is considered to be a significant factor of location by many of Atlanta's central district industries. One major reason is the increased buyer generation which results from such a location. This is especially true of the garment industries, the small jewelry manufacturers and, to some degree, the printing firms.

Most of the garment firms interviewed no longer consider proximity to competitors necessary because of the increasingly important role of the salesman in contacting all buyers. In past years it was necessary to locate near competitors to provide a district in which buyers could find a market place of diverse goods. The concentration of garment establishments served as a magnet which attracted the buyer and gave assurance that orders could be filled. If one company could not supply the desired goods it was only a short distance to many other firms capable of filling an order.

This arrangement is especially desirable to smaller firms which cannot attract many buyers except when a district location enables them to share the pull of the larger firms plus a considerable amount of "spill over" trade. Today, however, the buyer rarely

visits the factory because salesmen satisfactorily provide this service to both the big city retailer and the small town merchant. This situation, along with other factors, has caused most of Atlanta's garment manufacturers to consider location feasible anywhere within the metropolitan area. Yet these firms agree that it would be more advantageous to group together because of whatever "drop-in" trade might exist. One manufacturer even suggested the possibility of some fifteen additional garment firms to increase drawing power.

Small jewelry manufacturers are located in downtown Atlanta to be near each other, the post office, suppliers and wholesale and retail outlets. Belt manufacturers also desire a central district location mainly because of nearness to the main post office. Speciality printers consider a central district location necessary because of the communication factor. One Atlanta printer, for example, specializing in posters is located downtown to be near theatrical booking agencies and to be near competitors because competitive bids are customarily taken.

It is evident that downtown industries consider relationships with different establishments to be an essential factor of location. A San Francisco study found various and interesting reasons for central district industrial location:

- 1) a water-treating apparatus manufacturer cited convenience to consulting engineers whose offices are located in the adjacent financial and office district;

2) a glove manufacturer cited availability to central business district stores;

3) a printer cited nearness to the larger accounts.⁴³

Very few central business district industries indicate that services such as banks and eating establishments are a significant factor of downtown location. The employer appears to be little concerned with this definite employee asset which the downtown area offers.

Linkages are a definite factor in the location of many industrial firms in the central business district. This relationship may be in the form of external economies or the need to be near a specific establishment. As decentralization continues some industrial firms find it possible to establish needed relationships in the outlying areas of the city. This has provided these industries with an opportunity to leave the central district as adequate facilities become no longer available downtown. In many cases, however, external economies and proximity to competitors outweigh the disadvantages found in the central business district.

Labor. -- Accessible labor supply accounts for the location of central business district manufacturers whose existence depends upon an ability to mobilize labor at relatively low wage rates or whose seasonal production cycle dictates location close to a large elastic labor supply.

Most of the labor employed by downtown industrial firms is not highly skilled. According to the Atlanta survey, some fifty to seventy per cent of this labor is female and is high wage labor in relation to average female earnings, but it is not high income labor relative to average earnings of the total industrial labor force in a metropolitan area.

Interviews with central business district industrial firms in Atlanta found very few who consider labor as an important locational factor. These firms believe workers will follow regardless of whether location is in the central business district or ten miles east, west, north or south of it. Only a few firms believe industries leaving the central business district might encounter labor problems unless the firm is large enough to transport workers from central district locations to the plant site. Possibly the Atlanta manufacturers may find labor problems if outlying sites are obtained. One large, successful needle trades industry which moved to an outlying location in Atlanta found it necessary to transport workers to and from the downtown area by special bus. In Philadelphia the electronics industry considers proximity to public transit for workers one of the major locational determinants, and the apparel manufacturers believe a central location essential to provide the greatest accessibility to employees.⁴⁴

Garment contractors and firms employing predominately Negro workers consider a central business district location essential for

labor needs. The contractors apparently pay a relatively low wage and experience a constant turnover in workers. Their experience is that a location near other garment manufacturers and with convenient public transit attracts labor. Industrial firms employing Negro workers believe public transit to be very important in labor considerations. Apparel firms in New York and Philadelphia, for example, depend on a large number of Negro and Puerto Rican women.⁴⁵ A work force of this nature is more easily mobilized in the central district than in most outlying areas. Several firms in Atlanta consider a downtown location necessary only because of the available Negro labor supply.

Industries of a seasonal nature need the large elastic labor supply which the accessibility of the central business district provides. Candy manufacturing, for example, experiences seasonal fluctuations and must recruit a new group of workers, mostly female, in late summer, early fall and prior to Easter. This need for a large supply of unskilled labor plays a significant role in determining the location of these industries. In the New York area a few such manufacturers have moved to the outskirts of the city to escape high rents and have found their operations handicapped because of a difficulty in obtaining labor during the busy seasons. This labor problem has compelled the candy industry to remain in central New York.⁴⁶

One industrial firm in the Atlanta central business district prefers to leave both the central district and the metropolitan area to escape

labor problems. Although this firm pays a good wage, it is low relative to other metropolitan area industries. The firm reasons that outlying areas provide more "warm bodies" which can be trained whereas the city presents a labor shortage because of competition with higher paying industries. This case is unique in that none of the other central district industries interviewed attributed any labor problems to central city location. Many garment firms have, however, moved from the New York City central business district to sites completely out of the metropolitan area because of labor problems with unions.

Many industrial firms seek a central business district location because of labor considerations. Basically the need is for a large, flexible supply of relatively low income labor. The central business district supplies such labor because of accessibility, especially by public transit, and proximity to the older portions of the city where the desired type of labor typically resides. Although central district industries may claim that labor considerations are of no consequence in location, there is general agreement, with some exceptions, that a central business district location is advantageous from the standpoint of labor supply.

Problems imposed by central business district industries. -- Almost every city which recognizes the existence of manufacturing in the central business district has attributed certain problems to the presence of

manufacturing firms in the downtown area. Environmental blight and congestion appear to be the major objections to industrial activity in the business district.

Most central business district industry is found in vacated stores, in loft buildings, in deteriorated warehouses and even in abandoned residential structures. They locate in these places because more suitable sites have never been provided. Those industries which are forced, economically and functionally, to locate in the central district must obtain space. Yet the space which is available was not created for industrial use and does not meet their needs. The space ultimately acquired by these industries may be either much greater or far below their needs.

In Atlanta, for example, downtown industries are mostly located in multi-story buildings which were constructed some forty or more years ago. Almost all central business district industrial firms, with the exception of some very small printing establishments, are located in loft space. Firms which occupy several floors generally use the ground floor for office and shipping space and conduct the manufacturing process on the upper floors. Very few of the downtown manufacturing operations are located in structures which are really suitable for industrial use. Many of the buildings were suitable at one time but have become outdated because of technological advances. In fact, several

structures were constructed to the present occupants' specifications, and yet, today these same buildings impair the operating efficiency of their users. The lack of a modern, single-story plant has greatly reduced the operating efficiency of many central district industries, especially the printers. It is difficult to secure this need as the structures housing business district industry usually cover the entire area of the parcel or parcels of land on which they are located.

Those portions of the central business district in which industry is located are usually blighted areas. A majority of the central district manufacturers are located in structures which are in need of major repair externally but are in good condition internally. The buildings, with few exceptions, are leased and the increasing obsolescence of the plant and the desire of most firms to secure more suitable quarters has resulted in few major property improvements by either the owner or renter. It is obvious, in Atlanta, that much of the property has been handed down through families to the present owners. A substantial amount, however, has been acquired through distressed sale. Most of the property represents no investment by the present owners and no attempt is made to improve the structures.

The central business district industrial operations themselves are not obnoxious for the most part. Possibly they would have a detrimental effect on retail establishments if located adjacent to or intermixed with such uses, but the industrial firms are seldom located close to the

retail heart of downtown. In Atlanta, most are located in the fringe area adjacent to the governmental center or the office center of the business district. None of the manufacturers interviewed indicated that neighboring land uses hindered their operations to any extent or that neighboring establishments complained about their operations.

Traffic congestion, a major problem of the central business district, is usually very critical in the industrial portions of the central district. Generally the poorly platted streets and the arrangement of buildings in these areas make it difficult to provide proper loading space and adequate parking. Many of the loft buildings, formerly with single occupancy, are now divided and each firm generates separate pick up and delivery service. One study on trucks and urban congestion found a large percentage of total truck traffic volume to be concentrated in the central area of the city. The congesting effect of this truck traffic is compounded by the heavier overall traffic volume in the central area as well as the often very narrow, poorly platted streets.⁴⁷

Parking and loading space for industrial firms in the Atlanta central business district are non-existent or at the very most inadequate. Only one industry has ample parking and loading space and it is unique in both size and type. Almost all of the manufacturers interviewed stated that no parking or loading space was available or that the space available was very small, but they did not consider such an inadequacy to be a major problem. Apparently if materials and workers arrive as

scheduled the manufacturers are not concerned over any difficulties encountered enroute. Yet, adequate parking and loading space would obviously improve the operating efficiency of these firms.

Central district industries have suffered from the make shift nature of their arrangements. They are often treated as nuisances because of location in lofts, most of which are old and in blighted areas, and because of activities generated by them. The lack of adequate loading space prevents efficient delivery and pickup service and results in traffic congestion which is aggravated by the location of industries in the central business district. These manufacturing enterprises are usually the first element to be listed as contributing to blight in the central district. It is debatable, however, whether they are generators of blight or whether blight occurs because of obsolete buildings and poorly platted lots and streets.

A consensus of central Atlanta businessmen appears to be that loft operations, industrial and otherwise, which gravitate into the more deteriorated sections become a sore spot in the process of central business district development and progress. The general attitude is that either manufacturing is not proper to a central business district location or has not been developed properly. The solidification of light industries in poorly planned portions of the business district is disturbing to those business interests concerned with the future as they fear it will thwart the proper development of the central business district.

Whether central district industrial firms cause certain blighting problems or whether these firms are associated with blight only because the areas in which they are forced to locate are generally old and blighted is difficult to determine. Apparently, however, these firms are not obnoxious and the congestion created by them results from inadequate facilities and streets. Features such as obsolete buildings, inadequate space, poorly platted streets and others have placed central district industry in a poor position. To correct these problems cities must determine whether it is desirable to maintain the existing industries and possibly attract new firms or eliminate them from the central business district. In either case, methods should be found to encourage the proper development of these industries in advantageous locations. If these industries are appropriate, the opportunity for future development lies principally in redevelopment and rehabilitation of portions of the central district to meet modern industrial requirements. A lack of proper planning will result in blight and an exodus of industry.

Locational trends of central business district industry. --Central business district industry appears to be decreasing in most central business districts; however, there is some indication that the decrease is very slight in the larger cities.

The Boston, Massachusetts, City Planning Department predicts that manufacturing use in that City's central business district area will

decrease from an existing 5,950,000 square feet to 3,385,125 square feet in 1975. Industrial uses in Seattle's central business district have dropped approximately forty per cent since 1920, and there is no apparent industrial demand for downtown loft space which is now vacant.⁴⁸ Redevelopment has caused industrial uses to decline in many central business districts. This is true in Detroit where industrial uses have decreased primarily through the clearance of a large downtown river-front area and subsequent redevelopment as a civic center.

Although most cities are losing central district industry there are some indications of increases or possible increases. Also many cities have indicated a desire to maintain industrial uses in the central business district. A Philadelphia study found that although many industries will be moving out of the central district by 1980 the decrease will be offset by others moving in. The new firms will tend to be light industries in which market considerations are paramount.⁴⁹ Most manufacturing uses are emigrating from the Atlanta central business district; however, there is a small increase in publishing, lithographing and jewelry.⁵⁰

The central business district of New York City is losing a great deal of its manufacturing activities which have become standardized. Not all of the standardized operations have left, but the tendency has been to move out. This is true in the apparel, printing and electronics industries. Yet other industries are being drawn to the central district

or show little tendency to leave. This is especially true of the smaller garment firms which depend on the advantages of a "garment district" location. As the large printers move out, an increase in miscellaneous printing which needs to be near customers has moved in.⁵¹

An important question is: "Why are manufacturing uses moving out of the central business district?" The answer lies in the fact that central business district industries have been compelled to take whatever space is available because their needs have been neglected. Most central district industries are not able or willing to invest in structures; therefore, they are limited to obsolete factory buildings. Ninety per cent of the shifts in industrial location in Chicago appear to be a flight from older obsolete areas.⁵² A great need for redeveloping these areas is evident because every time a central district plant becomes vacant or only partially occupied there is an increase in blight.

As buildings have become available at low rentals in outlying areas, central district industries have tended to move outward. The need for more space, especially in a single-story plant, is a major reason for moving out. One Brooklyn firm achieved a significant savings in materials handling alone by shifting from a multi-story plant to a single-story plant. In its multi-story plant, sixteen man-days were required to unload a car of paper whereas only 1/2 of one man-day is required in its new one-story plant.⁵³

Various studies have concluded that many central business district industries had rather remain in the central district or in adjacent areas than move to outlying locations. Sixty manufacturers presently in the Cincinnati central business district expressed an interest in relocating in the Kenyon-Barr Urban Renewal Area which is adjacent to the central business district. The nearer to the central core the more interest was expressed.⁵⁴

A Brooklyn, New York, study recognized that many of the smaller firms would prefer to remain in the central area near the center of their markets, sources of supply and various business services if modern multi-story facilities with adequate off-street truck loading facilities were provided.⁵⁵ According to Vernon, however, new multi-story space is not the answer because of the high costs of recapturing the site. Such space would also face a poor market as it would be competing with obsolescent structures vacated by their prior owners.⁵⁶

What impact will this increase or decrease have on the future of the central business district? Many planners believe a decrease will be good for the central business district, particularly if the manufacturing uses are replaced by land uses which are more typically central business district in character. The Paterson, New Jersey, Planning Board, for example, states that the decrease in industrial land uses in that City's business district will have a positive impact. The reasoning is that "a more pleasant atmosphere may be expected

in a district exclusively dedicated to commercial and governmental activities. These concentrations will bring about increased commercial activities, increase the value of the land and, thereby, the revenue of the City."⁵⁷ Such a replacement will, however, call for an expansion of the central business district--a process which may take time. The problem of utilizing space until such time as expansion takes place is ever present.

In Detroit, a reduction in central district industries has resulted from urban renewal. The Planning Department has found the decrease beneficial as the industries which relocated were in a blighted area and the public facilities which replaced them have stimulated construction of appropriate central district activities, principally offices.⁵⁸

Then, too, many people believe that an increase in central business district industry is desirable. There appears to be a feeling that industrial activities can be compatible neighbors with typical central business district uses on the fringe of the central business district. Saint Paul, Minnesota, concluded that certain light industries are of benefit to the downtown area and should be located there because they generate business and are thus desirable.⁵⁹ Los Angeles does not consider the central business district increase in textile and jewelry manufacturing undesirable. The City Planning Department states that industrial uses are not considered detrimental in Los Angeles. The textile industries have probably the best display area and store fronts

of the central business district and have in many cases, effectuated renovations of other buildings.⁶⁰

Industrial uses are evidently decreasing in many central business districts while in others an increase has been experienced. There is disagreement over which of these trends exerts the more favorable impact on the central business district. Some believe that industrial land use is detrimental to the central business district while others believe it can prove beneficial. Basically, manufacturing is leaving the central business district because its needs have not been properly met. The tendency is for industrial firms to locate in the central business district until such time as economic maturity or standardization enables movement outward.

Future Plans of Central Business District Industry

That many industries are requiring more adequate plants and facilities is reflected in the large number of shifts in industrial location. In the central district the tendency is to move outward to sites which provide adequate facilities. In order to learn something about the plans of downtown industries, twenty-five industrial firms in the Atlanta central business district were interviewed. This section discusses the results of the interviews.

A large percentage of central business district industrial firms intend to leave within six years. The reasons for such a move are varied, but the two major reasons are a lack of space for expansion

and a need to gain increased efficiency by locating in a modern, single-story plant. Most of the firms which intend to move consider themselves somewhat independent regarding location. These firms would like to obtain a modern plant and are not concerned with the actual location of the plant as long as it is near major traffic arteries. A central business district location would be preferable but not if rents are higher than in outlying areas.

A number of industries have no desire to leave the central business district. Apparently the small needles trade contractor does not care for a modern type plant. One contractor, even though located in an obviously inadequate second floor loft, did not feel that an outlying plant was desirable as the facility presently occupied meets (as far as the contractor is concerned) all needs and presents no serious problems. Some manufacturing firms are content to remain in the central district because of no desire to grow. Many of these firms are progressive and successful but wish to avoid the complications and problems involved in a larger operation.

Most of the manufacturing firms presently located in the central business district intend to seek locations which will adequately meet their needs for facilities. Property in the industrial sections of the Atlanta central business district is in heterogeneous ownership and in many small land parcels. This makes it difficult to assemble land for expansion and is causing facilities to be built elsewhere.

Most of the industries seeking new facilities would prefer to locate in a planned district in or adjacent to the central business district if such a district existed and if rents were favorable. Other firms feel highly independent and express no interest in a central district industrial district; however, many of these firms have characteristics which tend to require a central location. They would undoubtedly remain if adequate facilities were provided. A large number of manufacturers need a central business district location and must remain regardless of whether certain requirements are met. As long as the needs of these industries are ignored they may prove a detrimental factor to the proper development of the central business district. Redevelopment and rehabilitation apparently offer the best possibilities for retaining industry in the central business district in a manner which meets its needs and allows it to fit into the central business district properly.

Appropriateness of Industry in the Central Business District

Most studies conclude that the central business district is not an appropriate location for industry. There are, however, people who believe that industry is an appropriate central business district land use. Much depends on the area that is delineated as the central business district. Those who delineate the central business district in a conservative manner (i.e. as just the hard core area) seldom think of

industry as an appropriate central district land use. Those concerned who simply ignore industry, as is commonly the case, in their studies of the central business district usually classify industry as non-appropriate.

Connell asserts that industrial uses are inappropriate to a central business district not only because of their own demands but also because of the demands of the retail and service trades. The reasoning is that heavy trucking movements, cluttered shipping docks and the presence of even a small ground-level factory are not conducive to shopper comfort or employee morale. However, several industrial uses were considered appropriate with the reservation that as a functional class they are neither appropriate to a central business district location nor do they require one for maximum operating efficiency. These land uses are: newspapers, printing and lithographing, jewelry and manufacturer's agents (actually these are merely offices).⁶¹

Murphy and Vance classified factories as "non-CBD" in character; however, the newspaper plant was considered an exception to the general rule. The generalization is that selling and advertising are important functions of the newspaper and are closely related to central district activities.⁶² Connell also considered newspapers as being closely identified with business services and cited advertising as a factor in favor of central district location.⁶³

A common assumption is that with an ample supply of low-cost rental space and with a dependable array of services the central business district is a natural incubator for small industrial firms. Each city is unique, however, and while this may apply to some it does not necessarily hold true for all. Apparently this assumption may be applicable to most large and older cities. A Chicago report implies that incubator firms are appropriate central district uses. The proposed plan recognizes the important role of the central area, with its supply of industrial floor space, in serving as an incubator for smaller industries which may later move to other parts of Chicago and its metropolitan area.⁶⁴

The Cleveland, Ohio, Planning Department considers incubator industries as appropriate for certain areas of the central business district. A demand for certain skills and services, low-cost space, the locational assets of proximity to port facilities and the hub of the regional freeway system are factors which attract these industries to the business district. Cleveland also considers printing and publishing to be appropriate central business district land uses.⁶⁵

Alderson and Sessions in their study of the Philadelphia central district found that blocks of relatively high-density industrial uses are mainly in or near the central core. This emphasizes the importance of light industry which often occupies loft space. Their study predicts a slight increase in loft manufacturing in the central core despite the

fact that many such industries will be moving out of the central district in the future. The new firms will tend to be light industries in which market considerations are all-important. The kind of space facilities required should be relatively unspecialized and even interchangeable to some extent with wholesale warehouse facilities.⁶⁶

A Cincinnati central business district study noted that decentralization has had the greatest effect on retailing (16 per cent decrease) and manufacturing (13 per cent decrease). Yet, it found a twenty per cent increase in wholesaling with stock.⁶⁷ This is contrary to the belief that heavy goods movement is becoming more difficult in the central business district and is a reason for wholesalers and manufacturers to move out. The Cincinnati increase was in the central business district fringe area with a significant decrease in the core area.

Cincinnati has recognized the needs of certain light industries for well-designed sites in an area properly oriented with respect to markets, to labor supply, to sources of material, to vehicular access and to service facilities. Cincinnati is attempting to meet this need by redevelopment of the Kenyon-Barr Urban Renewal Area into a planned light industrial district. This district will be adjacent to the central business district and will provide for all the essential needs of light industrial firms.⁶⁸

Many other cities have found that certain manufacturing uses are appropriate for a central district location. Each city apparently has

certain industrial uses which are considered appropriate to its central business district. Tulsa, Oklahoma, for instance, considers electronics and instrument manufacturing as kinds of industry which are well suited for location in the central business district. The desirability of these industries as business district occupants is attributed to their innocuous nature and adaptation to relatively small sites.⁶⁹

Saint Paul considers certain light industries beneficial to the central business district. These are industries such as manufacturing enterprises with a high employee per square foot ratio, manufacturing suited to loft type structures and manufacturing with a heavy reliance on the post office for small lots shipments.⁷⁰ These industries are considered an important source of customers for the downtown area. Present plans call for prosperous light industries to be retained until such time as available core area sites have been exhausted and central business district expansion can take place only in the direction of the industrial uses. It is recognized, however, that it would be advantageous to examine those industries now located near and in the central business district, determine why they are so located and then proceed to search for such industries requiring the particular services and facilities the central business district has to offer.⁷¹

The Saint Louis, Missouri, City Planning Department believes industry to be appropriate in the central district. In view of the fact that manufacturing increased in the Saint Louis central business district

and that no rail facilities and few modern industrial structures are available it is reasoned that the desirability of a central location for many types of light industry does exist regardless of the typical central business district disadvantages.⁷²

Disagreement exists among city planners over whether industrial land use is appropriate in the central business district. There is a tendency to classify manufacturing as a "non-CBD" use without giving it thorough study. Such a study is needed as each central business district may or may not contain appropriate industrial land uses or may be appropriate for only certain kinds of industries. Generally it is apparent that certain light industries (two excellent examples are the unstandardized garment industries and the printing industries) are appropriate for a central business district location. These industries have needs which the central business district can provide better than any other area, and they are not, if properly developed, detrimental to the overall central district land-use pattern.

The fact that manufacturing is decreasing in most central business districts does not necessarily imply nonappropriate location. This decrease could very well be attributed to the lack of proper planning which has resulted in problems of such a magnitude that manufacturing operations are forced to seek outlying locations.

Summary

From the sources examined in this chapter the following conclusions

may be drawn with respect to the industrial function of the central business district:

- 1) Industrial land uses are present in the central business district.
- 2) Industrial land uses are usually located within the "fringe" as distinguished from the "core" of the central business district.
- 3) Many kinds of industry are found in the central business district but the garment and printing industries tend to dominate in most business districts.
- 4) Central business district industries tend to be fairly small but successful firms which employ a relatively small number of workers at wages which are low in relation to the total industrial wage scale.
- 5) Central business district industries, with few exceptions, rent the space presently occupied at annual rents of \$1.00 per square foot or less. These industries have no desire to invest in facilities and can seldom afford to pay more than \$1.00 per square foot for space.
- 6) A large percentage of central business district industry depends upon prompt delivery to local markets and upon accessible public transit for employees.
- 7) The necessity of a close relationship with markets, with competitors and with certain external economies accounts for the location of many industries within the central business district.
- 8) Many central business district industries depend upon an accessible and large supply of low wage and seasonal labor.

9) Central business district industries are usually located in obsolete loft structures in older blighted portions of the central business district where poorly platted streets and inadequate loading facilities compound the problem of traffic congestion; however, most of these industries do not appear to be obnoxious or to contribute significantly to blight.

10) Central business district industries are decreasing in some cities while increasing in other cities. Those industries moving out of the central business district have generally been forced to leave because of a lack of space for expansion and the inability of the central business district to provide adequate facilities.

11) A central business district location is no longer imperative for many industries because of increased mobility and the appearance of certain external economies in outlying urban areas; however, most of these industries desire to remain downtown but only if adequate facilities and environmental conditions are provided.

12) Certain types of light industries are appropriate for a central business district location. Generally these types are: newly created or incubator industries which need certain central business district advantages; communications oriented industries; and unstandardized industries..

Industrial land uses of various kinds are present in most central business districts. These uses are located in the central district because

of certain advantages such as accessibility and availability. Although most central business district industries have certain needs which somewhat dictate a central district location, the tendency is to seek outlying areas where adequate facilities can be secured. Increased mobility and automobile ownership have made such locations possible in spite of central business district advantages; however, most firms would consider adequate central district facilities more advantageous than outlying sites.

The problem is for each city to determine whether industrial uses are appropriate to its central business district in view of the conditions which prevail. The history has been for many cities to deem industry a "non-CBD" use without comprehensively studying the problem. This study concludes that many industries are an appropriate function of the central business district because of certain needs; however, it is recognized that each city is unique and that this conclusion may not necessarily apply to every city. If industry, as is true of other urban elements, is to be an asset to the central district it must be properly developed in relation to the overall central business district land-use pattern.

The next chapter will deal with what the city planner might do to properly plan for the industrial function of the central business district.

CHAPTER III

PLANNING FOR CENTRAL BUSINESS DISTRICT INDUSTRY

Industrial land uses exist in the central business district, and although they are usually ignored or given relatively little attention by city planners and others, industry is an element which deserves serious study. Generally central business district studies arbitrarily identify industry as "non-CBD" simply because industrial uses do not appear proper. Such an approach might be realistic except for the fact that industry does exist in the central business district, it has reasons for such a location and it is usually appropriately located in the downtown area. To disregard industry in studies of the business district or to omit it from future plans will not solve the problems which are associated with it. Such a policy will only result in a continuation of the haphazard and unplanned industrial development which is presently found. If the overall development of the central business district is to be properly planned, industry cannot, as is true of any other element, be overlooked.

This study has concluded that industry is an appropriate land use in the central business district; however, it is recognized that industrial uses may not be advantageous in every case. Much depends on the

characteristics of the industries which are located in each central business district. It is important, therefore, that each city thoroughly study and analyse the industrial function of its central business district and determine whether industry is appropriate for location in it.

Whether the needs of central business district industries should be satisfied or whether these industries should be encouraged to seek outlying locations is a vital question which must be answered for each central business district.

Study of Central Business District Industry

A survey and analysis of central business district industry should be undertaken by every city in order to thoroughly understand the industrial function and the industrial potential of its business district. Such a study will enable the city to plan not only for the future of industry in the central business district but for the overall development of the central business district as well. To ignore the industrial element or to arbitrarily brand it "non-CBD" may prove disastrous to the comprehensive development of the central business district, to the industries themselves or to both.

The study might be included as part of a central business district study or plan or it might be instituted as a separate special study. In either case its purpose and scope would remain the same. Basically the purpose of the central business district industrial study would be

to determine whether industrial land uses are appropriate in the central business district. If industry is appropriate for such a location additional studies will be needed of the industrial demand and data analyses proposals will be required.

This thesis does not attempt to outline the technical procedures to be used in making a study of industry in the central business district. It is realized that each city must develop a method which is applicable to its particular situation. However, the factors to be included in the study should be analyzed qualitatively as well as quantitatively. A quantitative survey is likely to produce answers that are not necessarily representative of the actual desires or thinking of central business district industrial firms. Most central business district industries are very small firms which have devoted little serious thought to factors of location. They are very likely to arbitrarily give yes or no answers to many questions. It is necessary, therefore, to interview at least a twenty-five per cent sample of these industries and conduct the interview in a manner which will secure enough information to establish the actual thinking of these firms. Qualitative interviews will be invaluable when analyzing the data obtained from field observations, questionnaires, records research and other sources.

A complete study of central business district industry may be divided into three phases: 1) survey of existing conditions and industries; 2) study of industrial demand; and 3) analysis of findings

and preparation of plan proposals. Every city should make an inventory of existing central business district industries and determine its policy in regard to such industry. If industry is found to be inappropriate for location in the central business district, no further studies, except possibly a study of how to eliminate industries from the downtown area and of what uses can replace them, may be necessary.

Survey of existing conditions and industries. --Following is a check list which may serve as a guide in making a study of existing conditions and industries in the central business district:

Industry in the Central Business District

Industrial land use

Kinds of industries

Location within the central business district

Core location

Fringe location

Type of location

Basement

Ground floor

Loft

Amount of industrial space

Vacant industrial space

Potential industrial space

Economic status of industries

Age of industrial firms

Sales volume

Number of employees

Wages

Industrial land value

Rents, maximum and minimum

Characteristics of industrial buildings

Age of buildings

Height of buildings

Building coverage

- Structural condition of buildings
- Multi-use of buildings
- Building services available
 - Elevators
 - Loading and unloading facilities
 - Utilities
 - Egress
- Utilization of space
 - Office
 - Production
 - Storage
- Employment densities

- Transportation
 - Traffic access in relation to major traffic arteries
 - Traffic congestion
 - Method of shipping and receiving
 - Rail
 - Water
 - Truck
 - Market area and source of supply
 - CBD
 - City
 - Regional
 - National
 - Employee journey to work
 - Private automobile
 - Public transit
 - Walk
 - Parking facilities
 - Loading and unloading facilities
 - Off-street
 - On-street

- Linkages
 - Available external economies
 - Existing industrial concentrations
 - Relationship with uses outside of the CBD

- Labor
 - Types of labor employed
 - Seasonal
 - Low-wage
 - Female, male
 - Skilled, unskilled

- Commuting area of labor
- Working hours

- Blighting factors
 - Evaluation of industrial areas
 - Nuisance features
 - Neighboring land uses
 - Problems

- Public policies which affect industry
 - Building codes
 - Zoning
 - Taxation
 - Traffic regulations
 - Parking
 - Loading and unloading
 - Public services
 - Fire protection
 - Police protection
 - Utilities
 - Sanitary services

- Advantages of industrial location in the "CBD"
 - Attitude of industries toward location
 - Attitude of other "CBD" uses toward industry
 - Advantages of downtown location
 - Disadvantages of downtown location
 - Advantages of maintaining industry
 - Disadvantages of maintaining industry

- Appropriateness of industry for location in the central business district

Study of industrial demand in the central business district. --If, after completing an inventory of central business district industry, it is found that industry is appropriately located downtown, a study should be made of the industrial demand in the business district. Following is a check list of what might be included in such a study:

Industrial Demand in the Central Business District

Industrial land uses

Kinds of industries desiring a downtown location

Types of industries appropriate for location downtown

Location

Need for grouped locations

Reasons for concentration

Types of industries desiring proximity to each other

Need for location near other "CBD" establishments

Industries desiring a core location

Industries desiring a fringe location

Industrial facilities

Space needs

Local standards for CBD industrial densities

Demand for industrial space

Distribution of potential space

Demand for incubator space

Number of industries desiring downtown location

Future employment estimates

Space trends

Estimate of space needs

Land space

Building space

Single-floor

Multi-story

Incubator space

Building Needs

Type of buildings

Building services

Arrangement of space

Rent paying ability of industrial firms

Comparison between what is available and what the industries desire

Historical analysis of locational trends

Movements

Out of the CBD

Into the CBD

Intra-movements

Reasons for movement

Length of tenancy

Tenancy of incubator industries

Future trend

Labor needs

Service needs

Technological future of typical CBD industries

Definite plans to move

Analysis and plan proposal. --The information secured through the surveys of central business district industry and its needs should be analyzed in order to answer such questions as: what kinds of industrial uses are appropriate in the central business district; can the central business district benefit by retaining its existing industries and encouraging others to move in; in what portions of the central business district should industries be located; what types of facilities and services should be provided for industry; and what is necessary to plan for industry in the central business district?

After surveying and analyzing the various characteristics of downtown industries, it should be possible to establish policies and prepare plans in regard to the industrial function of the central business district. No one planning solution is applicable because of the unique nature of cities and of central business districts and of the industries found downtown. The planning of central business district industries may evolve only nominal improvements to structures housing these industries or it might require the creation of ultra-modern multi-story structures. Then, too, in some cities the policy may be that industry is undesirable in the central business district. In such cases it would be necessary to plan

for its removal and relocation elsewhere within the urban structure. The only specific recommendation which this thesis makes is that each city should study and analyze the industrial uses located in its central business district and plan for this industry in a manner which will be beneficial to the industries, the central business district and the city.

Planning Considerations

Once it has been determined that industry is an appropriate use in the central business district, plans should be developed for adequately providing its needs and properly integrating it with other business district functions. Usually the major factors deserving attention in planning for downtown industry are location, adequate rental space, loading facilities and access, and environmental surroundings. In some cities it may be that certain or none of these considerations are problems which merit attention.

Location. --Most appropriate industries could be located adjacent to any type of business district use because of the innocuous nature of their operation. However, locations next to retail uses are undesirable because of the higher rents which exist in such areas, of traffic generation and of the interruption in retail continuity which would result.

In planning for central business district industries the following should be considered in relation to location:

- 1) industries should be retained in the parts of the central business

district where industrial concentrations exist because the industries benefit from such a location and it offers an opportunity to provide common facilities;

- 2) industrial locations adjacent to retail uses should be avoided;
- 3) proximity to the main post office is a major advantage of central location for many industrial firms;
- 4) many industries require a close relationship with other business district uses;
- 5) the tendency of industry to seek "CBD fringe" locations;
- 6) the desirability of locations near the convergence of mass transit routes.

It is advisable to determine whether a downtown location is needed in order to be near specific uses when planning the location of industries. This consideration must not, however, cause industries to be placed in locations which are not beneficial to the comprehensive development of the central business district.

Adequate rental space. -- The most important consideration in planning for central business district industry is the provision of adequate space at reasonable rents. This is the factor which forces industries to seek outlying sites, and unless adequate space is provided it will be difficult to retain industries downtown.

The ideal solution to the problem of adequate space is the construction of a completely new design of multi-story structure for the

space characteristics of these industries. However, rent limitations may eliminate the possibility of constructing new industrial space in the central business district.

Most central business district industries desire space downtown and are somewhat reluctant to secure outlying sites. In some cities, if only minimum improvements were made to the existing buildings and to the predominately industrial areas, most of the industries would apparently have no desire to leave. Many industries are skeptical of complete clearance and new construction because they believe it would force them out of the central business district or out of business as rents would be excessive.

Some of the common objectives which must be achieved in regard to adequate rental space are the creation of room for expansion, the provision of adequate single-story space for some industries, the encouragement of improvements to structures housing industrial uses, the provision of flexible, unspecialized space, which is interchangeable, at reasonable rents and the provision of multi-story buildings with fast freight elevator service and adequate loading facilities.

Loading facilities and access. -- The lack of adequate off-street loading and unloading facilities and the heavy truck traffic which serves downtown industries add to the problem of traffic congestion. The elimination of these problems would help reduce traffic congestion, would increase the efficiency of industrial concerns and would improve the suitability of industries for business district locations.

The relatively small size of most downtown industries make it feasible to consider off-street loading and unloading facilities which can be shared by a number of industrial firms. A common loading dock could easily be provided where a number of firms occupy one large multi-story building or where space is available between two large buildings. Spot clearance may enable either the city or a private group to construct common loading facilities serving industries located in several buildings. Facilities of this kind might require the construction of moving belts in order to be efficient.

Truck traffic and the demand for loading space might be reduced considerably if the central business district could provide industries with quick and easy access to the main post office. Some planners have proposed a tunnel or some other type of limited access route from the industrial center of the central business district to the main post office. Such a facility would eliminate many trips within the business district and would be a tremendous factor in retaining industries downtown.

Proper access from downtown industries to major traffic arteries is desirable. Slight alterations to existing street patterns could make it possible for truck traffic to reach industries with a minimum of travel through the central business district. This factor should be especially considered in relation to downtown circumferential traffic arteries and the tendency of industries to locate in the fringe.

Adequate loading facilities and access will not only help provide a more efficient movement of traffic but will ease the objections of businessmen to industry in the central business district. The trucking firms which serve the downtown area would also benefit tremendously through increased efficiency.

Environmental surroundings. --An attractive environment is beneficial to both the industries and the central business district. In some cities downtown industries have experienced difficulty in obtaining workers because of location in blighted areas. Removal of seriously dilapidated structures, renovations, street improvements and proper sanitary service should help correct the problem of blighted environment. The upgrading of any one portion of the central business district will help improve its overall development.

Implementing Central Business District Industrial Plans

The objectives of planning for central business district industry can be achieved through urban renewal, private rehabilitation programs, zoning and code enforcement, among others.

The improvements needed to maintain industry downtown could be made by the local government or it might be possible to form groups of business interests to take the needed action. In fact, the needed improvements could very well require a combination of public and private action. Downtown interests might be organized into an improvement

association to plan for central business district industry. This type of group should appeal to the owners of central business district property which is presently used by industrial firms. Unified or individual action by such a group would help assure the rental of their property and the retention of industry downtown.

The rehabilitation of existing structures appears to be the most realistic solution to the problem of providing adequate facilities for central business district industries. A Philadelphia study found that renovations can provide space at rents which business district industries can afford whereas new construction is not likely to do so, except for large firms. The study found that new industrial loft buildings which meet all city building codes but are not elaborate in design would be impossible at anywhere near the maximum rent downtown industries can afford. Rehabilitation, however, offers promise if the building is structurally sound to begin with. For example, in Philadelphia a large loft building which was rehabilitated and provided with two new automatic elevators and loading docks, rents for seventy cents per square foot.⁷³

In the absence of private action or to support such action, it is possible, in many instances, to use urban renewal in planning for central business district industries. Today many cities have urban renewal projects which are either within or immediately adjacent to the downtown area, and it may be possible to extend the renewal areas in order to

include clearance, rehabilitation and public improvements in the industrial portions of the central business district fringe.

Many cities may desire to destroy the buildings housing industries because of blight and replace them with uses considered more appropriate to the central business district. Urban renewal projects have been contemplated in such areas with the re-use to be parks or civic centers, among others. The forcing of industries from the downtown area by redevelopment might be advantageous; however, such projects are often planned without any study of the industries and their function in the central business district.

It is possible, in many instances, to secure Federal assistance for urban renewal activity in the central business district. Under the Housing Act, as amended 1959, it is possible to obtain Federal assistance although an area is not predominately residential in character and is not to be redeveloped for predominately residential uses. The local government must, however, determine that the redevelopment of such an area is necessary for the proper development of the community. If urban renewal is used the central business district industrial study could serve as a basis for such a decision. The aggregate amount of capital grants for projects of a non-residential nature shall not exceed twenty per centum of the grants authorized under the Housing Act. The state must have enabling legislation which will permit this type of redevelopment.

A combination of spot clearance and rehabilitation appears to offer the best method for providing adequate industrial space in the central business district. Clearance of the very sub-standard structures can provide room for expansion, provide for loading facilities and improve accessibility through altered street patterns as well as improve the general appearance of the industrial areas. Rehabilitation can improve existing buildings enough to furnish desirable space which adequately meets the needs of central business district industry at favorable rents.

Zoning can set up standards to help control conditions which adversely affect downtown industries. Zoning provisions can give assurance of certain use requirements, height provisions and area provisions. These provisions will assure adequate light and air, reduce traffic congestion, prohibit inappropriate industrial uses, regulate densities and require room for access, health and safety.

Building codes can enforce normal rehabilitation and insure the existence of structurally sound buildings. Such codes, if properly enforced, would aid in protecting workers in small shops from adverse working conditions and help eliminate blighting conditions.

Summary

This thesis concludes by recommending that each city comprehensively survey and analyze the industrial function of its central business district and prepare plans based on the findings of such a study.

Industry is an appropriate function of the central business district in most cities. Those cities desirous of retaining and encouraging industry in the downtown area must plan for it in a manner which is beneficial to both the industries and the central business district. Planning will generally necessitate only minimum improvements which will satisfy the basic needs of central business district industries and allow them to remain downtown instead of seeking less desirable outlying locations. To achieve these improvements consideration should be given to private improvement groups, to urban renewal, to building codes and to zoning.

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